MOUNT ST. HELENS WILDLIFE AREA
2009 MANAGEMENT PLAN UPDATE

Washington Department of Fish and Wildlife

Land Management Summary

This is an update to the 2006 Mt. St. Helens Wildlife Area Management Plan (http://wdfw.wa.gov/lands/wildlife_areas/management_plans/pdfs/mt_st_helens_plan-final.pdf) that provides management direction for the Mt. St. Helens Wildlife Area Complex including the 2,744-acre Mt. St. Helens Wildlife Area in Cowlitz County Washington and numerous smaller "satellite" wildlife areas totaling 1,198 acres located in Skamania, Clark, Cowlitz, Lewis, and Wahkiakum Counties. The plan identifies needs and guides activities on the area based on the Washington Department of Fish and Wildlife (WDFW) Mission of *"Sound Stewardship of Fish and Wildlife"* and its underlying statewide goals and objectives as they apply to local conditions.

Plans are updated annually as habitat and species conditions change, as new regulations and scientific knowledge develop, as public issues and concerns evolve, and as administration of wildlife areas change. This management plan update also includes 2008 accomplishments, new issues, new land management strategies, and performance measures for 2009.

Damage to one of the erosion control structures

Inside

Updates/Changes

In 2008 several events or changes occurred that will effect future management of the Wildlife Area. Although not as severe as in some previous years, heavy rains once again damaged erosion control plantings and caused erosion along the edge of the mudflow in December. This included damage to the three wood pile structures built in 2007 intended to protect a portion of the erosion prone area and to collect sediment behind them. Although partially compromised, the structures still provided additional bank stability and erosion in the vicinity was less severe than it otherwise would have been. The partial failure of these structures provided valuable insight that will be used in the design of similar

projects in the future. As a result of the need to modify designs, construction of the project planned for last year has been delayed. In addition to work planned by WDFW further upstream, partner organizations have secured funding that will allow for repair of the existing structures and complete additional work in the same vicinity.

Volunteer preparing a site for replanting

A volunteer received a second grant through WDFW's volunteer cooperative grants program to rehabilitate forage production on a 20-acre site. The wildlife area manager used this funding as a match to obtain two other grants from the Rocky Mountain Elk Foundation. One was for further forage rehabilitation work on another site and the second will allow us to increase our liming and fertilizing effort to maintain elk forage in 2009.

Emergency winter-feeding took place on the wildlife area for the second year beginning in January due to extreme early winter conditions, a high number of elk on the site, and recognition of public concern. Feeding continued into mid-April. The extreme conditions persisted for much of the winter, which was one of the most severe in terms of snowfall on record. In early May the snow data collection station at Spirit Lake, East of the wildlife area, had over 31 inches of snow remaining, which was 7,800% of average. Even with the feeding program in place, the winter conditions took a heavy toll in the elk herd. The winter mortality survey that was conducted in May recorded 158 winterkill elk in the area that is surveyed each year. The number found in the survey area, which was double the previous high count, can be at least partially attributed to the unnatural concentration of elk that remained on the site into the spring due to the feeding operation. It is important to note that winter-feeding is not viewed by the agency as a measure that should be used on this wildlife area long-term and the decision to feed in 2007 and 2008 was based on conditions at the time and does not necessarily indicate that feeding will occur in subsequent years. The benefits of feeding operations are often questioned and the number of winter mortalities found in this instance may support those claims.

As part of the Habitat Conservation Plan for WDFW wildlife areas, the Mt. St. Helens Wildlife Area Complex was inventoried for species and activities in 2008. Inventories statewide should be complete in 2009 and the Habitat Conservation Plan is projected for completion in 2010.

New Issues

Success rates among hunters who participated in the hunt on the wildlife area (mudflow elk area 5099) continued to be low. In 2008, WDFW had reduced the number of hunts and the number of permits issued in each group to address low success rates and dissatisfaction expressed by hunters. While this improved the hunter's satisfaction, biologists expected a much higher harvest rate. While the low success last year can be largely attributed to very mild and warm weather during the fall, changes are in place to again try to increase harvest and provide

opportunity to a larger number of hunters. The boundaries of the hunt area will be expanded to include areas to the North and South of the wildlife area and permits will be offered to general modern firearm, archery, and muzzleloader hunters for the first time as well as youth and disabled hunters.

A public access closure is in effect each year during the winter and early spring to protect elk from harassment and help maintain their energy reserves needed to survive the winter.

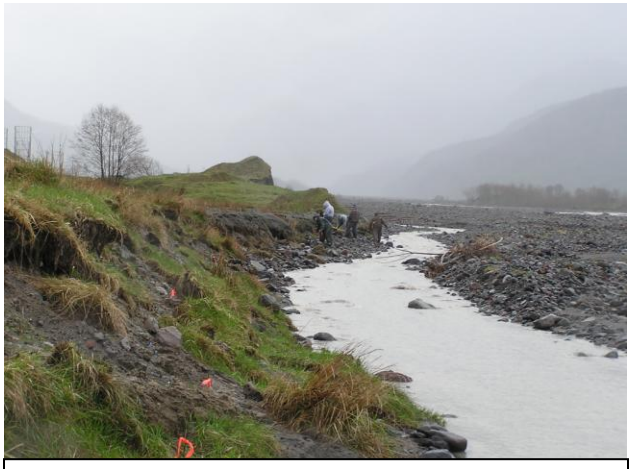
Due to continued violations of the winter public access closure intended to protect elk from harassment and help them maintain critical energy reserves needed to survive adverse conditions, WDFW implemented a new strategy to discourage violations. Because violations had been most common during March and April, it was apparent that the desire to collect shed antlers was the impetus behind much of the problem. In an effort to remove this incentive for individuals to trespass in the area, WDFW began picking up antlers as they were found during the course of work on the site, including winter-feeding, and removing them from the area. It appeared that unauthorized intrusions into the area were reduced by this measure. The new initiative did come at a cost as the new additional administrative task of cataloging and preparing the antlers for eventual sale took a great deal of time. A total of 143 antlers were picked up, one of which was particularly unique and was retained by the Region 5 wildlife program for display purposes. The remainder were divided into twelve lots and transported to the Oak Creek Wildlife Area for storage and eventual sale.

The Mt. St. Helens Wildlife Area and its satellite units have the smallest operating budget among WDFW's wildlife areas. Although the manager is careful to monitor expenditures and stay within the limits of the budget, the wildlife area ended the 2008 fiscal year at a deficit. Contributing factors included increased material costs and an unusually large amount of administrative time that was required to manage winter feeding operations, prepare a major grant application, coordinate work on several funded grant projects, and respond to the public and media during the winter. The budget problem became evident early in the spring and late spring/early summer work had to be curtailed as a result. The most notable work that was not completed was Scot's broom control, which is unfortunate as it represents a setback to progress that had been made in prior years.

Major Stewardship Accomplishments

Although neither was completed in 2008, progress was made on both land transfers that will add additional acreage and, in one case, a new satellite unit to the wildlife area. Both transactions with the Washington Department of Transportation (WDOT) and Clark County are believed to now be very close to completion. WDFW and the Lower Columbia Fish Recovery Board partnered on a grant application that was funded by the Salmon Recovery Funding Board, which will study current conditions and identify projects that should be undertaken to improve habitat for salmonids on Eagle Island in the North Fork Lewis River once it is transferred from Clark County. The wildlife area manager and other biologists from the Region 5 office are participating in technical group meetings and planning efforts by the US Army Corps of Engineers associated with the sediment retention area that will soon be transferred to WDFW, which will be of benefit in eventually developing management strategies for the WDOT lands.

Two tree/shrub planting efforts took place in the spring. The first and largest planting was a continuation of the effort to establish riparian vegetation along the erosion prone edge of the mudflow as a long-term stabilization measure. The second project was a component of a volunteer cooperative grant project to enhance elk forage, but also included a provision to improve riparian conditions along a portion of Bear Creek for fish. Between the two projects, a total of approximately 12,000 trees, shrubs and cuttings were planted along close to 2 ½ miles of stream bank.



Volunteers planting trees along the Toutle River

Forage site prior to rehab work

Established forage plants the following year

Volunteer Mike Braaten completed the replanting of two sites, totaling approximately 50 acres, to enhance elk forage production on the wildlife area. These efforts were funded by a grant that Mr. Braaten received through WDFW's Volunteer Cooperative Grants Program. Work funded by a second volunteer grant began in the fall to replant another 20-acre site that will be completed in 2009. The wildlife area manager was able to use the funding from these grants as part of the matching funds to obtain three separate grant awards from the Rocky Mountain Elk Foundation (RMEF). One of the RMEF projects is already complete and included replanting approximately 20 acres to enhance elk forage production at a third site. We plan to begin work in May or June to enhance a separate 25-acre site. The ultimate benefits of this work will be largely dependent upon the level of maintenance effort that occurs in subsequent years, which will require additional funding. The third grant will help with the maintenance of these sites in the short term as it provides funds for purchase of additional lime and fertilizer to maintain forage areas.

Status Report of 2008 Performance Measures

Key performance measures are identified each year to monitor progress and identify any issues that might interfere with planned priority activities. This information will be used to delete, add or alter priority strategies for 2009.

2008 Performance Measure	Status of Performance Measure	Explanation of Progress/ 2009 Related Activity/ Comments
Complete 50 acres of intensive treatments within identified "Intensive Forage Management Areas" (IMA's) to enhance elk forage utilizing some or all of the following techniques: Mowing, harrowing, liming, over-seeding, and fertilizing. Identify other sites with potential for intensive ground based management.	Approximately 70 acres received lime and/or fertilizer treatments. Other methods were not implemented due to budgetary issues and forage enhancements at other sites.	Increases in material costs may limit our ability to meet the minimum acreage specified in the plan without additional funding support. Limited sampling conducted in the fall suggested a 40% increase in forage production on one of these sites when compared to a similar untreated area.
Continue to monitor progress made on the WDOT land transfer process to acquire lands by 2008. Action required by both WSDOT and WDFW Real Estate Programs.	Progress was made and the transfer is nearing completion	Begin formal resource inventory and planning for this new area in 2009 and develop initial management strategies. The additional lands will also create the need to reprioritize some activities or their location as well as their associated budgets.
Continue to work with the district wildlife biologist to provide effective and enjoyable hunting opportunities within the wildlife area and make adjustments as necessary.	Additional changes were made including enlarging the hunt boundary and including traditional user groups.	Retain as a 2009 performance measure in the event that harvest/ satisfaction does not improve.

Implement measures over a two-mile area that includes, at a minimum, seeding and tree planting to lessen the risk of further major losses of riparian and elk forage habitat due to river avulsions/erosion and leading toward long-term improvement in anadromous fish habitat in the Toutle River.	Approximately 10,000 trees, shrubs and cuttings were planted along about 2 ½ miles of the edge of the mudflow. Seeding occurred over the same area. Survival rates overall were good although portions of the planting did erode during subsequent high flow events. Erosion was confined primarily to a localized area near the middle of the mudflow.	Continue in 2009
Continue work to plan, permit, and implement the placement of engineered streambank protection measures to further stabilize the remaining mudflow and Toutle River floodplain.	Construction is planned for late spring/summer 2009. Additional grants have been received to repair structures built in 2007 and undertake additional work downstream.	Complete construction and cooperate with project partners to obtain funds and complete additional projects.
Control a minimum of 40 acres of Scot's broom and other noxious weeds.	Scot's broom control was limited to hand pulling in an area along Bear Creek. Other efforts were reduced due to budget issues and unavailability of the weed crew. Both knapweed stands were controlled by hand pulling, which found only a few plants.	Focus on coordination with weed crew and devote as much field time as possible to this measure to try to catch back up to where we were in 2007.
Continue to work toward providing better information materials about the wildlife area that are readily available to the public in the form of a fact sheet or pamphlet and signage at various locations around the site. Also make the information and materials available to others that provide interpretative information in the area.	Deferred due to budgetary issues discussed above.	Attempt to complete in 2009
Formalize the approval from Weyerhaeuser to place improved information boards at the three primary locations used to access the wildlife area and install (assumes materials can be purchased within available budget). Post pertinent information and advisory of wildlife area rules so that users will be aware of rules before they arrive on the wildlife area.	Deferred due to budgetary issues discussed above.	Attempt to complete in 2009

Continue to work with local constituents to resolve the future use of the surplus portion of the Hall Road property.	The surplus process has not been a priority in the agency and this may not be an issue for the foreseeable future. An agreement with Cowlitz County relating to a road widening project may result in rehabilitation of the parking area once associated with the ball field.	Structures associated with the former ball field continue to deteriorate. Replace this measure in 2009 with one that begins to clean up the site and address potential liabilities.

New Strategies

The wildlife area plan identifies many strategies or activities to address the agency's strategic plan goals and objectives, why the area was purchased, habitat conditions, species presence, and public issues and concerns. The following updated strategies have been added to respond to previously unaddressed or new issues or changes on the wildlife area. New strategies may also be in response to adaptive management as staff evaluate the effects of past management activities.

Issues identified in italics were provided by the Citizens Advisory Group. These public comments are captured at the end of this document. Although underlined strategies have no current funding source, identifying these needs is the first step to securing additional funds.

The current wildlife area plan has a strategy that closes the wildlife area to the public from December 1 through April 30 each year. At the April 2008 Advisory Group meeting, the wildlife area manager asked for input on whether the closure should apply to the lands to be added to the wildlife area via the DOT land transfer. *The advisory group recommendation was to not have the closure apply to the entire new area but was open to the idea of selecting geographic features that would make the closure boundary more recognizable.* When the issue was discussed this year *at least one member questioned whether a closure was needed any more. It was suggested that human harassment could be beneficial by driving the animals to new clear cuts in other areas and inconsistent enforcement of the closure was not fair to those that obey the rule.* Currently the closure area follows the existing wildlife area boundary, which does not have easily recognizable features that can be located on the ground. After consulting with the district biologist and local WDFW enforcement personnel, we propose the northernmost portion of the old N-1 dam and the current GMU 522 boundary to define the closure area. This would include a portion of the new DOT transfer area. We have also included a provision to modify or add other areas within the DOT transfer area to the closure if future monitoring of animal response to public use reveals impacts to the herd that are of concern. The existing strategy will be modified to read as follows but may be subject to further review prior to implementation. WDFW acknowledges that there is an undetermined acreage of private lands east of the proposed closure boundary line described above and will consult with the owner prior to implementation, as their cooperation would lead to a more clearly defined situation for enforcement purposes. The revised strategy will read as follows:

A. Strategy: Maintain the existing closure of the wildlife area to the public from December 1 through April 30 each year. Upon completion of the transfer of DOT lands associated with the

sediment retention area to WDFW, redefine the closure area to "that portion of the wildlife area lying east of a line beginning at the point where the wildlife area boundary meets the northernmost point of the old N-1 dam following the Dam to Hoffstadt Creek, then down Hoffstadt Creek to the North Fork Toutle River, then along the North Fork Toutle River to the Mouth of Deer Creek then upstream on Deer Creek to the Wildlife Area Boundary on the South Side of the valley." Monitor elk responses to public use within the area added to the wildlife area and, if warranted; consult with the Advisory Group, appropriate WDFW staff, and other stakeholders to identify new closure areas or other measures that could be employed to protect elk from harassment. This is necessary to address the concern that elk are being driven off of forage areas and that the extra energy expended by elk due to human disturbance increases the energy deficit in individual animals, possibly leading to increased winter mortality in the herd. In addition, WDFW will explore cooperation with adjoining landowners to make the closure rule more enforceable.

2009 Performance Measures

Performance measures for the Mt. St. Helens Wildlife Area are listed below. Accomplishments and progress toward desired outcomes will be monitored and evaluated annually.

1) Complete 50 acres of intensive treatments within identified "Intensive Forage Management Areas" (IMA's) to enhance elk forage utilizing some or all of the following techniques: mowing, harrowing, liming, over-seeding, and fertilizing. Identify other sites with potential for intensive ground based management. Continue to evaluate the benefits of these measures as well as forage production in other areas.
2) Cooperate with volunteers to complete grant funded forage enhancement projects. Identify opportunities for future projects and apply for additional funds as opportunities arise.
3) Complete the Washington Wildlife and Recreation Program funded project to implement the placement of engineered streambank protection measures to further stabilize the remaining mudflow and Toutle River floodplain. Work with other partners to expand on this work through other currently funded grants and future grant applications.
4) Control a minimum of 40 acres of Scot's broom and other noxious weeds.
5) Implement measures as needed and as funding allows including seeding and tree planting to lessen the risk of further major losses of riparian and elk forage habitat due to river avulsions/erosion and leading toward long-term improvement in anadromous fish habitat in the Toutle River.
6) Assuming completion of the WDOT land transfer, begin formal resource inventory, management strategy development, and initial management within funding limitations on the transferred lands.
7) Continue to work with the district wildlife biologist to provide effective and enjoyable hunting opportunities within the wildlife area and make adjustments as necessary.
8) Continue to work toward providing better information materials about the wildlife area that are readily available to the public in the form of a fact sheet or pamphlet and signage at various locations around the site. Also make the information and materials available to others that provide interpretative information in the area.
9) Formalize the approval from Weyerhaeuser to place improved information boards at the three primary locations used to access the wildlife area and install (assumes materials can be

purchased within available budget). Post pertinent information and advisory of wildlife area rules so that users will be aware of rules before they arrive on the wildlife area.

10) Remove one old dugout and perform other clean up at the old ball field on the Hall Road Unit to address attractive nuisance, liability, and unsightly appearance of the site.

Citizens Advisory Group Input

A Citizens Advisory Group meeting was held on April 21, 2009 to review management progress, and address any new issues or provide input on existing issues. Those in attendance included representatives from Willapa Hills Audubon/Cowlitz Conservation District, Rocky Mountain Elk Foundation/Cowlitz Game and Anglers, Weyerhaeuser Forester (retired), Backcountry Horsemen, Mt. St. Helens Preservation Society/local business owner, US Forest Service, and Toutle Valley Community Association.

The following new input/issues were addressed at the meeting:

Issue: The revision to the strategy outlining the winter public access closure was discussed by the group. One member questioned whether we should continue to have an access closure, suggesting that human activity could be used to drive the elk into other areas where he felt range conditions were improving due to timber harvest. Inconsistent enforcement of the rule was also cited as a problem.

Response: The public access closure was widely supported in the development of the management plan. Despite issues relating to erosion, the mudflow still remains the most significant forage producing site at low elevation in the valley. Harassment of animals not only limits their opportunity to forage, it also depletes their body fat reserves that are critical in their ability to survive winter conditions. Seedling damage in commercial forest land was one factor WDFW considered in deciding to reduce the overall herd numbers and actions to keep animals on public lands helps to address this issue. We do agree that we need to work toward better enforcement of the closure but continue to believe that it has been beneficial to the animals. The change to the closure boundary recommended above is intended as one measure in improving the effectiveness of the closure by making the boundary more recognizable. We also will be pursuing cooperation and participation of adjacent landowners to address enforcement concerns.

Issue: A concern was expressed that many of our past efforts to control erosion or increase forage production on the wildlife area have not been successful. It was further suggested that once the DOT lands are transferred to WDFW, these current efforts should be abandoned and all of our effort should focus on the new lands and this would leave the current area to develop a more natural balance.

Response: While many of the initial efforts did fail, lessons were learned that have been applied to ongoing projects and successes have been realized. It is important to remember that most of the erosion occurred during major floods in the 1990's and losses have been much slower since that time. Another important factor is some of the post eruption actions and the current nature of other lands adjacent to the wildlife area that are not in a natural state. Erosion rates within the

current wildlife area boundary are probably higher due to salvage logging on the site prior to WDFW acquisition and the sediment retention structures downstream that decrease the slope of the riverbed. Much of the surrounding landscape within the blast zone is a monoculture of even aged stands of Douglas fir that is of little benefit to wildlife, including elk that rely on understory plants for food or cover. Ongoing thinning and eventual clear cutting will improve these conditions but will certainly not have the same benefits of a natural forest stand. While the impact of erosion to elk habitat is a concern, the erosion control work also helps to protect fish habitat in Hoffstadt and Bear Creeks where at least 60% of the adult fish trucked around the sediment retention structure are released to spawn. The recognition of the importance to fish is the factor that has generated increased interest in funding the work along the Toutle River.

Until 2007 all of the erosion control effort had been in the form of herbaceous and woody plantings which were, for the most part, small in scope due to limited funding. In that year, during a record rainfall event, erosion was less significant in areas where the plantings had been established for a longer period of time and the previous work probably had a benefit in slowing the loss of elk forage area. Placement of structures was always seen as a need since we made erosion control a priority. It was not until last year that the first pilot project was constructed. Even though it is easy to look at the structures as a failure, they did provide an additional measure of protection and protected the immediate area around them from erosion that could have been much worse. This has allowed us to modify plans for future work, which will also be monitored and evaluated to gain information that may be useful not only in projects on the wildlife area but other areas as well.

As efforts to increase forage producing acreage began in 1999, the ability of the river to shift course was underestimated and a number of areas were planted that were subsequently lost to the river. However, some plantings that were done in more stable areas were successful initially but declined rapidly in productivity as funding for maintaining them was limited. Sites where pre-planting preparation was more intensive were also more successful and timing of planting was recognized to be a much more critical factor than in other areas. The work that is currently under way is taking the lessons learned in previous projects into consideration and the locations have been selected based on what appears to be a lower risk of erosion as well as their past productivity.

While not expressly stated in the plan, one of the concepts that we have been trying to move toward is to not only increase the forage producing acreage but also to increase the distribution of forage across the landscape. Addition of the DOT property certainly provides the opportunity to do this but we do not feel that all current efforts should be abandoned. The nature of the topography in the area, to a large degree, will always dictate migration patterns in the herd and we cannot reasonably expect the animals to change their habits because we move our efforts to a different area. As specific strategies are developed to manage the lands that will be acquired, existing, or perhaps expanded, resources will have to be evaluated and reprioritized to determine which areas and projects receive emphasis.

Issue: In addition to the discussion regarding the DOT transfer lands, it was also suggested that WDFW should consider purchasing additional lands above the valley floor. The thought being that they would be more stable and potentially more beneficial long-term.

Response: Recently WDFW's acquisition efforts with regard to this wildlife area have focused on completing the DOT land transfer. However, we have discussed other potential acquisitions and plan to explore possible acquisitions in other areas. These could be adjacent to the existing or DOT lands or in other parts of the watershed. For example, WDFW applied for but was unsuccessful in one grant application for funds to acquire properties in the area known as "The High Lakes" as an elk summer range and recreational fishing area.

Issue: The 2008 list of the top ten unfunded items in the wildlife area plan was reviewed by the group. No recommendations were made to reprioritize the items but at least one member wanted to make sure that we were avoiding erosion prone areas with regard to some of the activities.

Response: We have added language to clarify erosion prone areas would be avoided to the extent possible on some of the items. We also have adjusted the estimated cost on some of the items. The "Top Ten List" is attached as Appendix A to this update.

At the conclusion of the meeting, future meetings later in the year were discussed with possible topics including a site visit to the DOT lands, developing strategies for the DOT properties, and possibly a combined meeting with the Shillapoo Advisory Group to discuss the satellite units. Input from some members of the Shillapoo group may useful as they may be more familiar with some of the satellite areas and issues in Clark and Skamania Counties in particular.

Want to see the full plan?
Go to –
http://wdfw.wa.gov/lands/wildlife_areas/management_plans/pdfs/mt_st_helens_plan-final.pdf

Contacts:
WDFW Vancouver Office
(360) 696-6211
Wildlife Area Manager
(360) 906-6725

APPENDIX A

Mt. St. Helens Wildlife Area "Top Ten List" of Unfunded Items from the Wildlife Area Plan

2009

The following table identifies the top unfunded items from the Mt. St. Helens Wildlife Area Plan. The list was developed with the help of the Wildlife Area Advisory Group in April 2008 and reviewed again in 2009 when some clarifying language was added. In some cases wording of the tasks has been edited somewhat from the text in the plan for purposes of clarity in this exercise. The reader should bear in mind that the cost estimates are approximate. Actual costs particularly for Capital Projects (Items 1, 6, and 10) could differ substantially. Costs of some materials such as seed and fertilizer are increasing and it is impossible to predict what the actual cost may be one to two years from now.

It is also important to note that additional labor is needed to support several of these activities otherwise activities currently funded will suffer. Implementation of items 2, 3, 5, 8 and 9 as a package would require a new seasonal position, which would fit into a six-month window from February 1 through July 30 each year. This would be a technician level position and within the complex from a different perspective, is one of our greatest needs. If this were combined with the unfunded labor needs identified for the Shillapoo Wildlife Area it could become a 12 month permanent position because those labor needs occur primarily from August through January.

Task	Explanation	Estimated Cost
1) Install erosion control structures along the riverbank of the North Fork of the Toutle River.	Work is currently funded by an RCO grant but we are certain that more will be required. Estimated cost (to right) would restore funding that fell below the cut line in this biennial budget.	$250,000 (One time with the potential for future need)
2) Approximately 100 acres of additional areas at five locations show particular promise in expanding the forage producing acreage and appear to be less prone to erosion due to their location or other factors. Some have been planted in the past but production at these locations has diminished. Scarify as needed and reseed these sites with a forage mixture.	High potential for matching funds if we had additional funding for this activity. Annual estimate includes labor and materials for 30-40 acres each year. After planting, a similar commitment is needed to maintain the planted areas. Much of the initial work has been accomplished through outside grants but maintenance funding is still needed.	$12,000 (annually)

3) Treat additional forage acreage beyond current funding levels, which may include liming, fertilizing, and harrowing to promote plant growth. Avoid areas where there is an immediate threat of erosion losses.	Expands acreage up to 100 acres each year at current material and labor costs. Potential increases in cost of supplies are a concern.	$15,000 (annually)
4) Maintain and improve forage production on an estimated 700 acres that remain of the original mudflow area by applying fertilizer (or lime if feasible) by air as funding allows. Areas with ongoing erosion threats would be avoided.	Estimate is for 400 acres annually. Good potential for matching funds. (Minimum viable acreage for this type of project is about 100 acres.)	30,000 (annually)
5) Coordinate additional ground spraying or pulling/cutting of Scot's broom with agency weed crew and DNR WCC program. Also consider the use of inmate labor, which may require additional funding.	Estimate is for additional labor and material costs.	$6,000 (annually)
6) Establish woody vegetation or other structure at the upper end of previous avulsion areas so as to lessen the chances of future catastrophic events that could cause further losses of suitable anadromous fish habitat.	Partner organizations have received a grant that will at least partially address this issue. Cost reflects estimated full cost, which may go down when the above project is complete.	$200,000 (One time with the potential for future need)
7) Aerially spray large dense stands (Scot's broom) when funding is available. Estimated need is for forty acres each year until the large stands are under control and consist primarily of young plants sprouting from residual seed that can be easily controlled from the ground.	Improvements to ground based control efforts have reduced this need but some aerial spraying will enhance that effort. 40 acres annually as stated for about 3 years.	$6,500 (annually)
8) Survey for weeds and conduct legally required control as required on the satellite units. Additional skilled labor is needed to fully address weed control needs on these sites.	Allows for labor, travel, and material costs. (Need about 2 months effort each year)	$10,000 (annually)
9) Plant or otherwise encourage the establishment of woody riparian vegetation along Bear Creek.	Includes annual tree/shrub plantings at two locations over a five-year period. Cost includes small amount of additional labor and other materials.	$4,000 (annually, for four years)

10) Pursue funding to pre-engineer and implement the approved design at the access site on the Abernathy Creek Wildlife Area, which has been closed due to insufficient resources to control public abuse of the site resulting in degradation of ESA listed fish habitat. (Two phase project)	Planning only. Idea is to redesign the site with barriers, etc., to prevent past abuse. Cost is based upon a similar planning effort recently in the region.	$75,000 (One time) (Future cost TBD)